

WHAT IS CLAIMED IS:

1. A fixation device for treatment of an orthopedic indication comprising:

a first portion and a second portion;

5 a first clamp assembly for releasably attaching the first portion with at least one bone pin;

a second clamp assembly for releasably attaching the second portion with at least one bone pin;

10 a coupling assembly joining the first portion with the second portion;

the coupling assembly operable to allow rotation of the first portion and the second portion relative to each other in generally vertical and horizontal planes; and

15 respective controls for incremental rotation in the horizontal plane independent of rotation in the vertical plane and incremental rotation in the vertical plane independent of rotation in the horizontal plane.

2. The device of Claim 1 wherein the articulated
20 coupling assembly further comprises two worm gear assemblies.

3. The device of Claim 1 further comprising an external fixator.

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4. The device of Claim 1 further comprising the first portion having a length less than the length of the second portion.

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5. The device of Claim 1 further comprising the first portion and the second portion having respective elongated configurations defined in part by respective generally rectangular cross sections.

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6. The device of Claim 1 further comprising the first portion and the second portion having substantially the same length.

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7. The device of Claim 1 further comprising:
a first control for incremental positioning of the first clamp assembly relative to the coupling assembly independent of the position of the second clamp assembly; and

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a second control for incremental positioning of the second clamp assembly relative to the coupling assembly independent of the first clamp assembly.

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8. The device of Claim 1 wherein the coupling assembly further comprises:

a first worm gear assembly having a first worm gear mounted on one end of the first portion;

a second worm gear assembly having a second worm gear mounted on an adjacent end of the second

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portion; and

the first worm gear assembly and the second worm gear assembly engaged with each other.

9. The device of Claim 8 further comprising:
a first worm shaft operable to incrementally
position the first worm gear; and
a second worm shaft operable to incrementally
5 position the second worm gear.

10. The device of Claim 8 further comprising:
a first clamp screw operable to lock the first
worm gear in a desired position relative to the first
10 portion; and
a second clamp screw operable to lock the
second worm gear in a desired position relative to the
second portion.

11. A method for treatment of an orthopedic indication comprising:

releasably attaching a first portion of a fixation device with at least a first bone pin;

5 releasably attaching a second portion of the fixation device with at least a second bone pin spaced from the first bone pin;

incrementally adjusting articulation of the first portion relative to the second portion and independent of
10 the second portion; and

incrementally adjusting articulation of the second portion relative to the first portion and independent of the first portion.

15 12. The method of Claim 11 wherein adjusting articulation between the first portion and the second portion of the fixation device further comprises adjusting a first worm gear and a second worm gear.

20 13. The method of Claim 11 further comprising:
releasably attaching the first portion with the at least first bone pin by a first clamp assembly;

releasably attaching the second portion with the at least second bone pin by a second clamp assembly;

25 incrementally adjusting the position of the first clamp assembly relative to the second clamp assembly; and

incrementally adjusting the position of the second clamp assembly relative to the first clamp
30 assembly.

14. The method of Claim 11 further comprising:
incrementally adjusting articulation of the
first portion relative to the second portion by rotation
of a first worm gear; and

5 incrementally adjusting articulation of the
second portion relative to the first portion by adjusting
the position of a second worm gear.

15. The method of Claim 11 further comprising:
10 securing the first portion in an articulated
position relative to the second portion by clamping a
first gear in a desired position; and

securing the second portion in a desired
articulated position relative to the first portion by
15 clamping a second worm gear in a desired position.

16. An external fixation device comprising:
a first portion and a second portion coupled with
each other by a first worm gear assembly and a second
worm gear assembly;

5 the first worm gear assembly operable to
incrementally adjust rotation of the first portion
relative to the second portion in a generally horizontal
plane; and

the second worm gear assembly operable to
10 incrementally adjust rotation of the second portion
relative to the first portion in a generally vertical
plane.

17. The external fixation device of Claim 16
15 further comprising:

the first worm gear assembly having a first
worm shaft and a first worm gear;

the second worm gear assembly having a second
worm shaft and a second worm gear; and

20 the first worm gear securely attached with the
second worm gear.

18. The external fixation device of Claim 16
further comprising:

25 a first clamp assembly for releasably attaching
the first portion with a pair of bone pins; and

a second clamp assembly for releasably
attaching the second portion with at least a pair of bone
pins.

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19. The external fixation device of Claim 16
further comprising:

a first control operable to adjust the rotation
of the first portion relative to the second portion

5 independent of the second gear assembly; and

a second control operable to adjust rotation of
the second portion independent of the first worm gear
assembly.